

**City of Pataskala  
Utility Department  
2018 Annual Report**  
*“Safety, Excellence, and Reliability!”*



*“If there is magic on this planet, it  
is contained in water.”*

Loren Eiseley

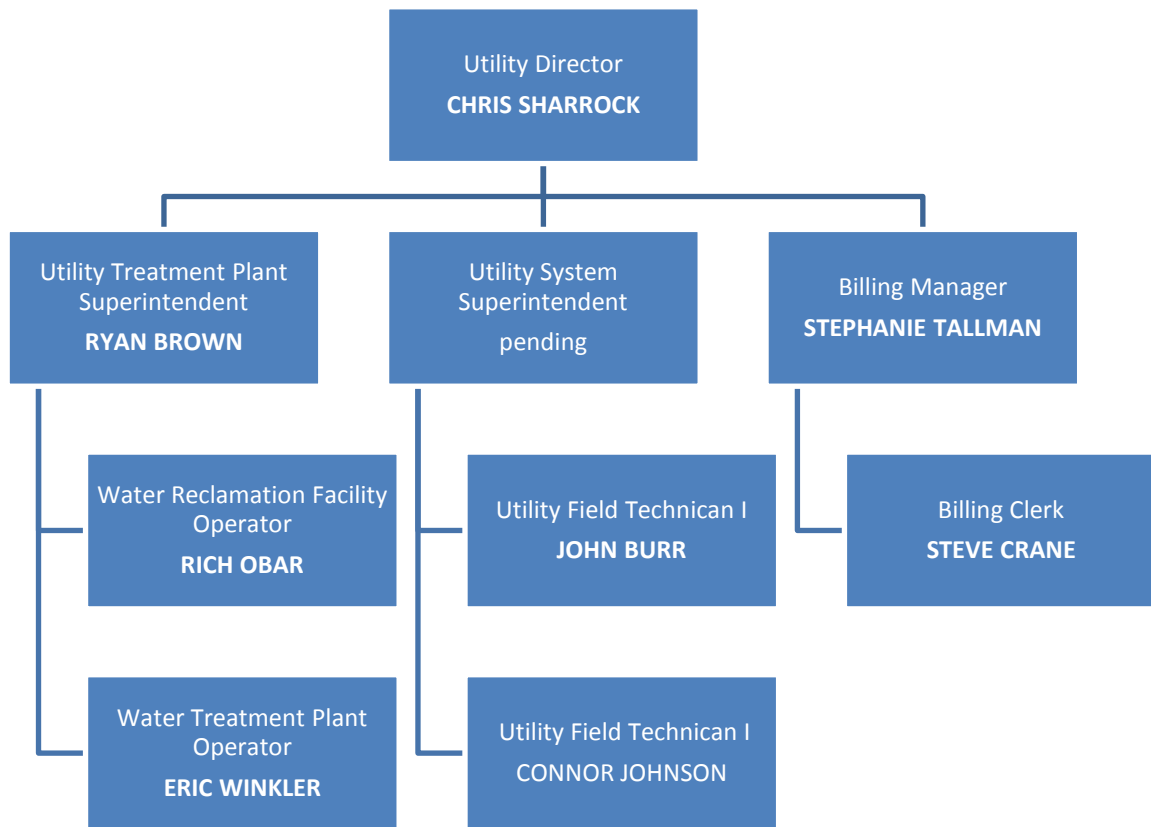
**Chris Sharrock  
Utility Director**

Dear Mayor, Council, Administrator, and Directors,

I am pleased to share with you the 2018 Annual Report for the City of Pataskala's Utility Department. The goal of this report is to condense all of our progress, projects, challenges, and accomplishments during the 2018 calendar year. 2018 was a very successful year in the overall mission of the Utility Department in our pursuit of, "Safety, Excellence, and Reliability!"

I would like to introduce you to all employees that contribute daily to the success of the Utility Department. Our staff is on the environmental front line, to ensure public health, and to "Protect and Conserve".

## Utility Department Staff



## **Billing Team 2018 Highlights**

- **3282** Customer utility accounts.
- **39234** Bills sent out during 2018.
- **61** new customers in 2018.
- **4077** Customer related phone calls.
- **4621** Visits to the Billing Window by customers and residents.
- **726** Services orders, water and sewer related service duties for customers.
- **57** Customer service disconnects due to non-payment. This represents 0.02% of our customer base. This serves as an indicator that the staff is diligent in collections and communications with our customers. The Billing Manager exercises reasonable flexibility to receive all moneys due while avoiding service disconnection whenever possible.
- The Billing Team and the Zoning Department collaborated to ensure the best product to our new residents. The staff developed a plan of action to ensure zero gaps in final compliance.
- The Billing Team works to frequently send out notices to our customers via bills and post cards. This information ranges from helpful information on the department, City events, and annual reports to the customers.
- The Billing Team is involved in the annual audit process to ensure our operation meets expected financial methods.

The Billing Team ensures timely delivery of service to our customers. The Billing Team is diligent in providing top notch customer service every day of the year. This includes keeping the meter reading on a schedule month to month, to ensure the bills go out on time, and attentiveness to customer service order requests. The Billing Team processes every payment on a monthly basis and accounts for every penny through diligent accounting practices. The Billing Team in 2018 processed **\$3,666,334.64** in the form of service charges which includes \$635,275 of water and sewer capacity charges for new customers / new builds.

The Billing Team is small in size but mighty in deed. Their duties are vital to the operation of the department and their efforts cannot be overstated. These individuals serve on the front line of customer service and ensure customer satisfaction.

## **Water 2018 Highlights**

The Water Distribution System consists of more than 600 fire hydrants, nearly 4,000 main line and service line valves, 4 elevated water storage tanks, 4 clear well storage tanks, 6 active water treatment wells, 1 water booster pump station, 2 treatment plants, and 58 miles of water main pipe line. The 2018 calendar year for the Utility Department was productive and successful in our daily mission of clean water. We made efforts in equipment replacement and equipment revitalization was accomplished through maintenance efforts. Maintenance efforts include numerous hours in plant operation duties, preventative maintenance duties at our facilities, and duties in the distribution system.

- **2018 Water Distribution Hydraulic Modeling Study** The Utility Department worked with a consultant to better understand the current and future limitations of the distribution system. This investment was to directly understand future demands with pressure concerns in a target development areas. The study provided guidance on improvement project and future goals. We will continue to update this system as we continue to grow with changes in the system.
- **2018 GIS System Project** The Utility Department took great strides in developing our GIS system for our underground infrastructure. We worked with our consultant to build and update our systems to stream line our department efforts in infrastructure management.
- **2018 Creek Road Water Main Improvement Project** The Utility Department identified a restriction in the distribution system by utilizing the Hydraulic Modeling Study. This point was a reduction in water main size from 12" to 6", causing excessive head resistance and inefficient delivery throughout the system. The increase in main size gave us a significant increase in both flow and pressure to the areas in and around "Old Town".
- **Headleys Mill Tower Returned to Service** The completion of the 2018 Creek Road Water Main Improvement Project allowed the Utility Department to return Headleys Mill tower to service. The removal of the discovered restriction allows the two towers that feed the low pressure zone in our system to work together with each other. This tower being put back online increased our water storage capacity by 250,000 gallons.
- **Water Booster Pump Station Pump Upgrades** The Utility Department upgraded two of its three booster pumps that provide water to the Beechwood Trails and surrounding areas. These pump upgrades resulted in a reduction of run times by an average of 8 hours per day. They also reduced the amount of time it takes to fill the Beechwood Trails towers by 80%.
- **Hydrant Flushing Program** The Utility Department completed its annual hydrant flushing program in October
- **Valve Exercise Program** The Utility Department continues to work on its annual valve exercising program, ensuring the proper operation of the main and hydrant control valves in the system.

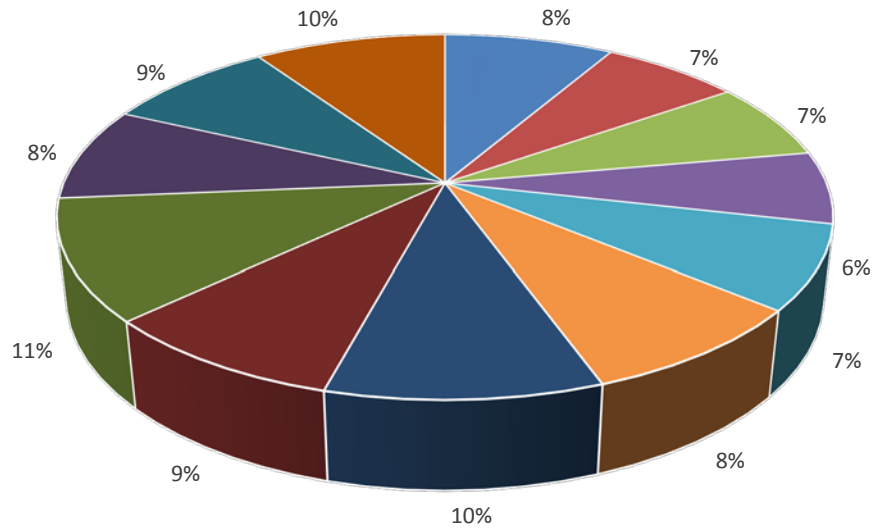
- **Public Education Efforts** We provided educational information to the customers regarding “Drinking Water Quality Advisories” and our procedures for implementation and notification of the public. The Utility Department has also begun a monthly Social Media Informational Outreach program covering a different aspect of the department each month.
- **Volunteer Program** The Utility Department has also begun a program with Licking Heights high school to grant community service hours that are required for graduation in exchange for painting hydrants in the system.
- **Emergency Plan Update** Due to new regulatory requirements we have continued to update our emergency operation plan. We continue to build on this to create a comprehensive emergency operation manual.
- **Other notable accomplishments**
  - 8 Water main repair jobs.
  - 6 Main Valve repair jobs
  - 17 Service line repair jobs.
  - 0 Hydrants replaced.
  - 6 Hydrants repaired.
  - All hydrants flushed annually during the unilateral flushing program.
  - Over 4,000 laboratory tests to ensure OEPA compliance.
  - 48 post excavation restoration jobs.
  - 2,765 OUPS locate requests fulfilled by the staff.
  - All water towers were inspected for future maintenance consideration. Leak repaired at BWT tower 1.

- **Treatment Process Information**

Water Treatment Plant #1 (WTP1) has the maximum treatment capacity of 1.3 million gallons per day (or 900 GPM) while Water Treatment Plant #2 (WTP2) has the treatment capacity of 864,000 gallons per day (or 600 GPM), with a combined production capacity of 2.164 MGD. The Water Distribution System consists of 4 Water Towers, 1 Booster Station, and over 58 miles of main line pipe work.

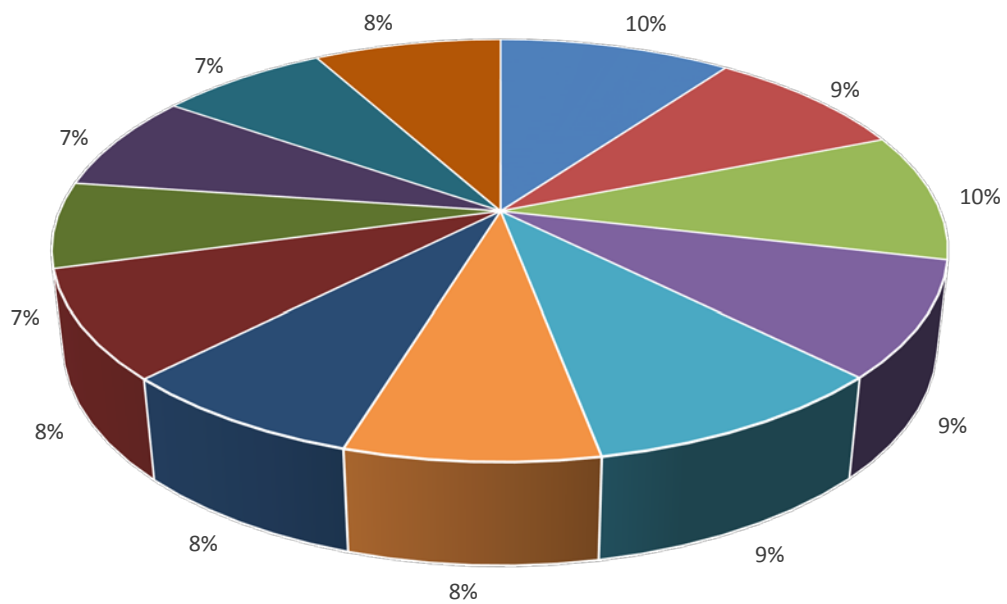
In 2018, Water Treatment Plant #1 produced a total of **140.04** Million Gallons (MG) and Water Treatment Plant #2 produced **183.23** MG; the total combined production for the year was **323.27** MG with an average daily production of .886 Million Gallons.

2018 WTP1 Production  
140,044,000 gallons

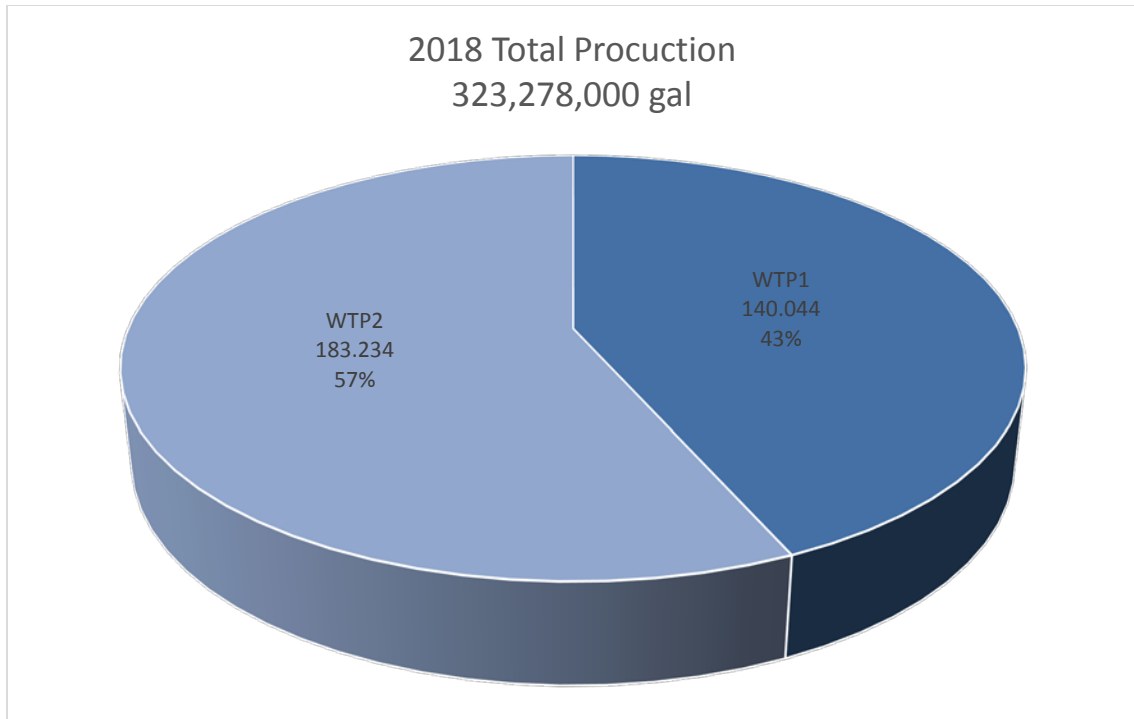


- January
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- December

2018 WTP2 Production  
183,234,000 gallons



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- December



- **Production vs. Water Sales**

In 2018, our yearly water loss percentage average (production versus water usage billed) was 14%. The water loss calculation is a method to determine system efficiency on a supply and demand basis. The loss percentage or unaccounted water use is a direct result of water loss in water main breaks, failed water meters, service leaks, and system flushing operations. Unfortunately, this also includes potential leaks that have not surfaced.

Future efforts can be made to better determine our actual water loss calculation by the installing of direct metering points in the distribution grid on main lines. A conservatively calculated average of 22% represents our daily water production that is used to pressurize the grid. The 22% specifically is produced for grid pressurization and storage in the system via the Southeast Tower to provide a sufficient static pressure when the production is at rest. The data is confirmed in our hydraulic modeling study. The fact that we do not have a single transmission main to provide all produced water directly to the towers is a major factor in this issue. The unnecessary production is compounded with no dedicated delivery point to the grid. Understanding this concept, the amount of water unaccounted for is 14% annually.

In efforts to ensure the best pressure possible in the historic village area (also the suction point for the booster station) we have to carry the Southeast Tower at a near over flow elevation with no more than a 4 feet operating level. Calculated, this provides a theoretical amount of unconsumed water in the tower near 380,000 gallons, which varies in the vessel based on production and demand. The ideal operating range or consumption span of the tower should be 20 feet. If we operated with that “fill and drain” principal using our system, we would receive daily calls for low or no water pressure.

I consider our water loss percentage to be manageable understanding the age of the infrastructure in historic Pataskala Village areas and system inefficiencies. We will continue in 2019 to reduce our water loss percentage by locating non-surfacing water leaks, respond to water leaks quickly, and stay on a healthy schedule of replacing aged water meters.

Please see the below information regarding the past 5 years relative to the production and sale of water with our growth rate. There is a significant increase in produced water compared to billed water. I believe a portion of this is due to the practice of providing free water to developers for line flushing purposes during construction of new developments, a practice that the department will not be continuing. Moving forward, water that is used for flushing out lines under construction will be billed to the contractor using it.

Year	MGD	MGD Billed	New Customers
2012	310.93	214.46	48
2013	279.39	208.57	51
2014	278.52	203.39	34
2015	286.79	205.29	48
2016	311.88	213.45	51
2017	306.94	208.22	46
2018	323.28	213.63	61
<b>Total</b>	<b>2097.73</b>	<b>1467.01</b>	<b>339</b>
<b>Average</b>	<b>299.68</b>	<b>209.57</b>	<b>48.43</b>



## **Water Reclamation 2018 Highlights**

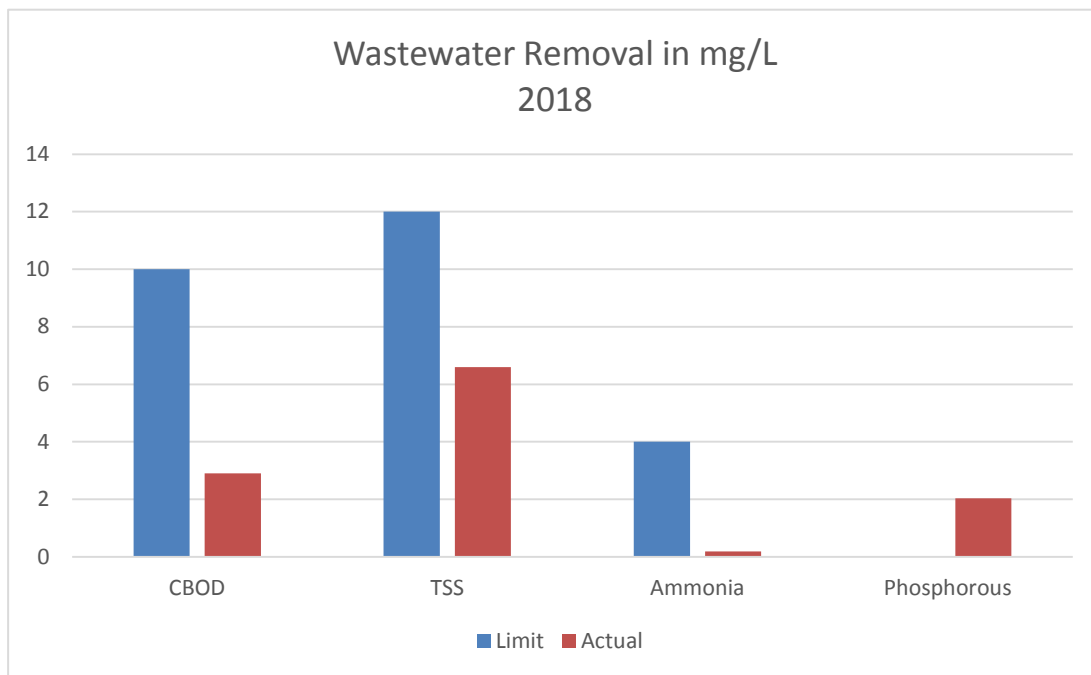
The Wastewater Collection System consists of 7 Lift Stations, 774 manholes, and 38 miles of sewer main pipe line. The 2018 calendar year for the Utility Department was productive and successful in our daily mission of clean water. We made efforts in equipment replacement and equipment revitalization was accomplished through maintenance efforts. Maintenance efforts include numerous hours in plant operation duties, preventative maintenance duties at our facilities, and duties in the collection system.

- **2018 Biosolids Program** The Biosolids Management Program resulted in 70.84 dry tons of nutrient rich product for agricultural beneficial reuse. The program is on the frontline of reuse and recovery of the beneficial application of biosolids. Unfortunately, the relationship with our local farmer along with the skill set need to apply the solids to the fields dissolved with the loss of one of our employees. The department is currently pursuing new ways to dispose of our Biosolids including the possibility of hiring a contractor to establish multiple relationships with local farmers and to apply the solids to the fields in accordance with good farming practices and OEPA regulations.
- **2018 GIS System Project** The Utility Department took great strides in developing our GIS system for our underground infrastructure. We worked with our consultant to build and update our systems to stream line our department efforts in infrastructure management. There is still work to do in the area of service lines being added to the system, but the bulk of the main lines are accurately depicted.
- **1 Meter BDP 3DP Belt Filter Press** The existing Prime rotary press had become unreliable and it was determined that an upgrade was necessary to continue operations at the Water Reclamation Facility. MSD installed a Belt Filter Press in December that dramatically increased our ability to process the solids at the WRF, while at the same time drastically reducing our polymer demand in the process. This provides the operators significantly more control in the treatment process while at the same time reducing energy and chemical costs dramatically.
- **2018 Ohio EPA Mandated Phosphorus Removal** The 2017 Phosphorus Study was conducted by the Utility Department. Study results supported the inability of the facility to meet future requirements without facility improvements. Design options have been vetted and a plan to move forward with facility upgrades in 2019 in efforts to improve the facility to meet future regulatory requirements is underway.

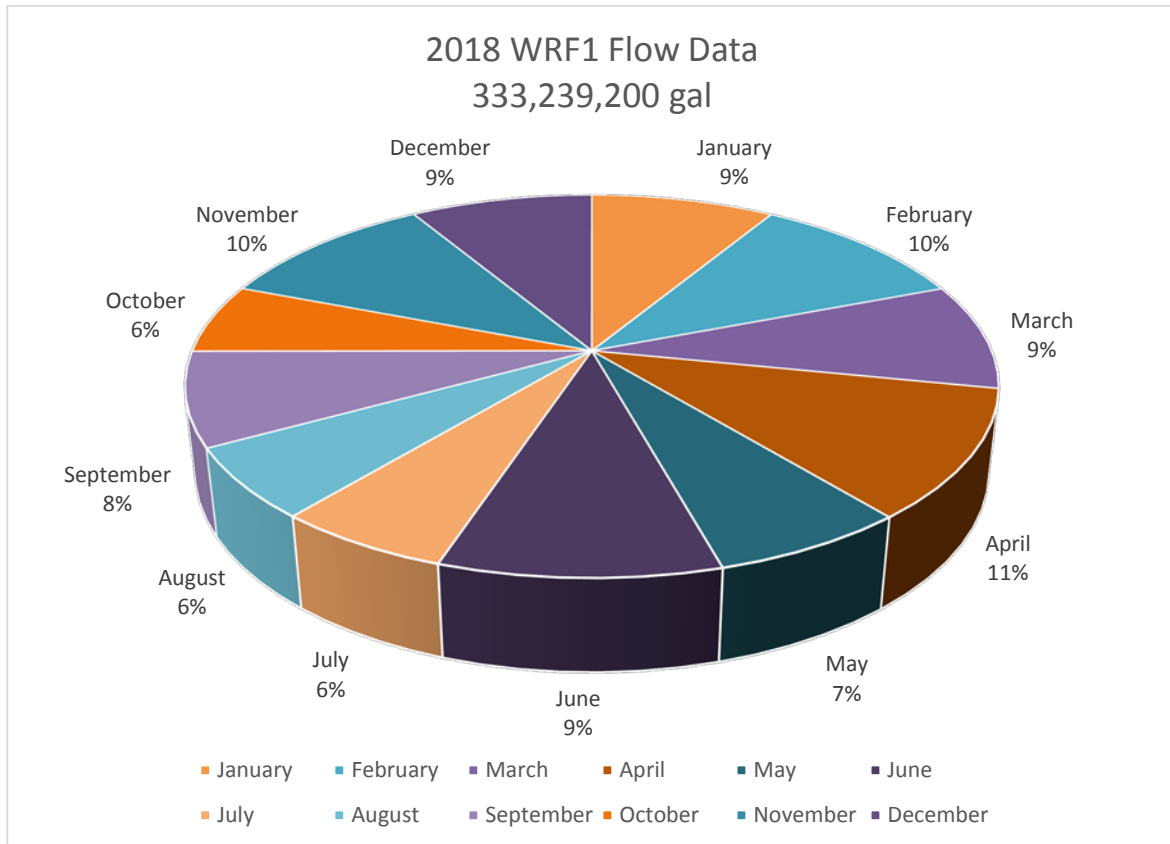
- **Standby Emergency Pump for Eastside Lift Station** The Department purchased a 6" standby emergency pump with the capability of handling the full load to the Eastside Lift Station. Due to this lift station's close proximity to resident's homes, a failure of the lift station could result in sewage backups entering resident's basements in 45 min. This is not enough time to respond to an issue, so the standby pump was purchased and is hooked up at the station. It is controlled using a float system that will start and stop the pump as needed.
  
- **Other notable accomplishments**
  - Preventive cleaning of 10,000 feet of sewer main line. 2018 was a year to focus on maintenance areas that require frequent attention. A new system known as the SL-RAT will be utilized in 2019. This system uses sound waves to identify areas that need cleaning and televising, preventing the department from cleaning pipes unnecessarily.
  - Nearly 3,000 laboratory tests to ensure OEPA compliance.
  - 70.84 dry tons of produced and beneficially reused biosolids.
  - Only 1 Sanitary Sewer Overflow was encountered in 2018. Due to an electrical surge, a motor component failed and resulted in an overflow at the Creek Road Pump Station. It is important to note that our SCADA system did work as designed and notified the on call operator of the failure, however and most unfortunately, the operator did not respond correctly to the call. Disciplinary actions were taken and this incident was used as a teaching moment for the rest of the department.

**The Shawnee Water Reclamation Facility (WRF1)** has the maximum treatment capacity of 1.1 million gallons per day (MGD). The WRF treats all of the wastewater generated by customers in Pataskala service area.

- The Ohio EPA requires that our WRF1 meet the following requirements under treatment standards: CBOD (Carbonaceous Biological Oxygen Demand) and TSS (Total Suspended Solids) must meet an **85%** removal from influent levels to final treatment levels. The 2018 removal average for CBOD was **98.34%** and TSS is **98.88%**. The maximum contaminant levels required by the Ohio EPA are as follows: CBOD at **10mg/L**, TSS at **12mg/L**, Ammonia at **4 mg/L** in the winter and **1.2 mg/L** in the summer. Our effluent levels average CBOD at **2.9 mg/L**, TSS at **6.6 mg/L** and Ammonia at **.185 mg/L**. We are currently exceeding the expectations of our treatment level under the OEPA's current standards. Future limitations for effluent phosphorus will be **1 mg/L**. Our 2018 average was **2.03 mg/L** with a removal rate of **48.00%**.

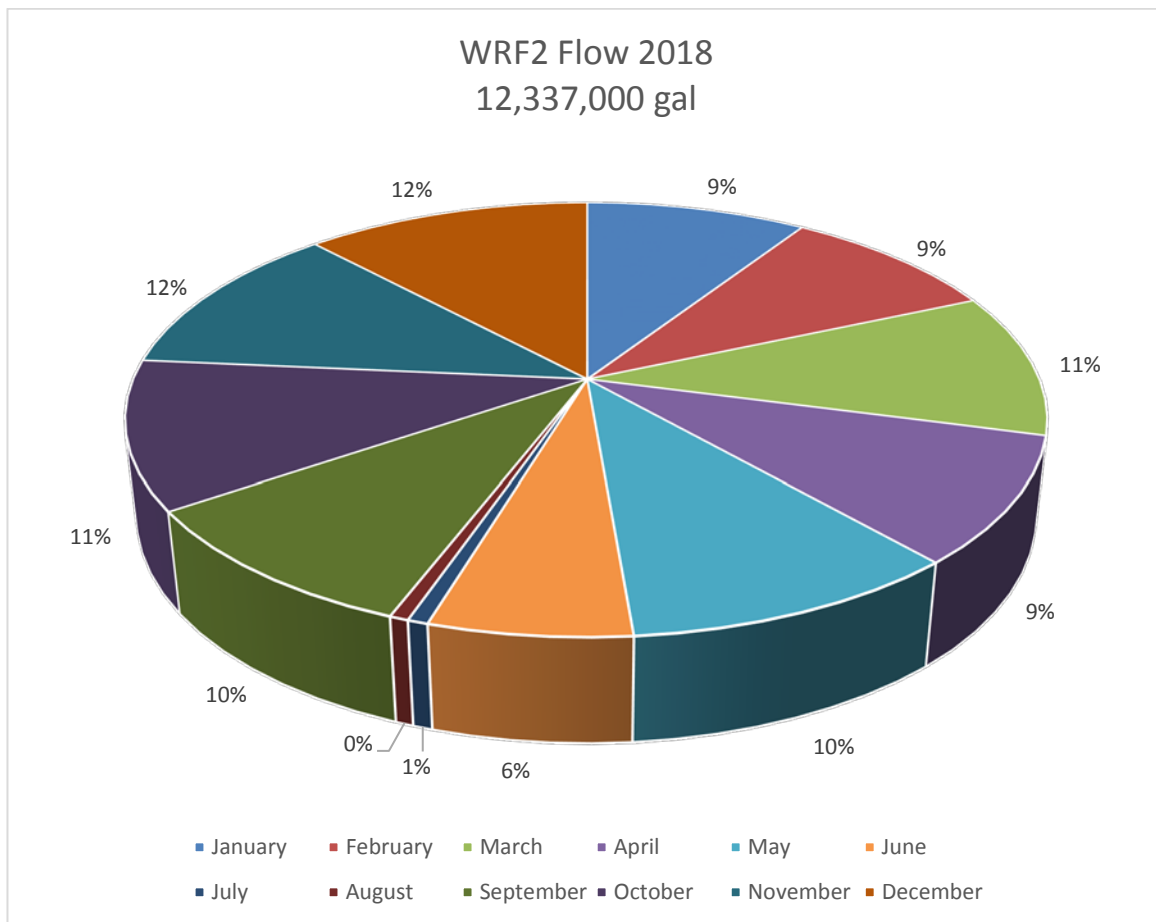


- WRF1 treated a total of 333.24 million gallons during the course of 2018 with an average daily flow of .91 million gallons per day.



**Inflow and Infiltration:** Based on the available information, the Pataskala Water Reclamation Facility 1 and Collection System is under considerable surface and/or ground water infiltration. The treatment facility sanitary collection system indicates an annual water meter usage of 159.88 million gallons. This number represents the water customers that receive sewer service from Pataskala. Based on annual treatment facility and flow data it can be calculated that nearly 48% of our annual treatment flow is directly related surface / ground water infiltration. To say that again, nearly half of the water treated at our wastewater plant is not wastewater, but ground/ rain water. Our treatment plant, for an annual average, treats .91 million gallons per day. Our in town water usage rates indicates a daily usage of .44 million gallons per day, based on annual averages. Based on available data an inch of precipitation can contribute an additional 1.86 million gallons to the treatment facility. The Westside Tributary Area (historic village) represents the largest and oldest portion of the system with a total of 98,920 feet (18.8 miles) of main line infrastructure. The aged infrastructure is the source of our inflow and infiltration. System inflow and infiltration will need to be addressed as we seek to grow and utilize the full capacity of our system and treatment facility.

**The Refugee Water Reclamation Facility (Wastewater Treatment Facility for WTP#2) (WRF2)** has the daily design flow capacity of .084 MGD. The WRF2 treats the wastewater generated by the WTP#2 operational processes consisting of iron filter and softener back wash discharge. The Refugee WRF2 treated a total of 12.34 million gallons with an average daily flow of .037 million gallons per day. There were efforts made in July and August to try and achieve the OEPA Strontium discharge requirements without adding the dilutions water, but these were unsuccessful. While dilution allows us to meet our limits, it does result in an additional 30 to 40,000 gallons of treated drinking water added to the discharge per day.



The pursuit of clean water is a mission that is only accomplished through the hard work, knowledge and dedication of the employees of the Utility Department. These individuals are able to work as one collective team to provide clean water on demand to our entire system and they do it with an excellent level of customer service. This report is intended to share some of our critical data points and the completion of our annual goals. Our goal in 2019 is to continue to grow and progress in our mission to “Protect and Conserve” our finite resource; water. We will continue to strive for continual growth and progress as we seek to do our very best in every task. We will continue to make strides to maintain our water and wastewater infrastructure in a responsible and respectable manner. We appreciate your support as we meet every challenge with a resolve for solution.

Highest Regards,



Chris Sharrock

City of Pataskala

Utility Director

*“Water is the driving force of all nature.” - Leonardo da Vinci*